

**MACROECONOMIC DETERMINANTS OF ECONOMIC
GROWTH AFTER FINANCIAL SECTOR REFORMS IN
TANZANIA**

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CERTIFICATION

The undersigned certifies that he has read and here by recommends for acceptance by Open University of Tanzania a Dissertation entitled: **Macroeconomic Determinants of Economic Growth after financial sector in Tanzania**, in partial fulfillment of the requirements for the degree of the Masters in Economics of the Open University of Tanzania.

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Prof.Deus D. Ngaruko
(Supervisor)

Date.....

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I, **Bura Patrice Baramay**, do hereby declare that this Dissertation is my own work and has not been submitted for a Degree award in any other University or Higher Learning Institution.

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DEDICATION

This dissertation is honestly dedicated to my wife Caroline and my Children Baraka, Flavian and Florian for their support and encouragement during my study.

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ABSTRACT

The study analyses macroeconomic determinants of economic growth in Tanzania after financial sector reforms. It aims to examine the effect of Budget deficit (BD), Inflation rate (INFL), Exchange rate (EXCH) and Foreign Direct Investment (FDI) on economic growth in Tanzania. The study uses the Ordinary Least Square (OLS) and cointegration relationship among the variables. The data were collected from the Ministry of Finance (MOF) and multilateral organizations; UNCTAD, IMF and WDI. The data covered the period spanning from 1995 to 2013 and were interpolated in quarterly series.

The findings indicate that budget deficits adversely affected economic growth in Tanzania during the period under study. From the findings an increase in the budget deficit resulted into declined economic growth. Further, the findings suggest a negative relationship between inflation and economic growth implying that increased inflation rate led to a decline of GDP. However, a positive relationship between economic growth and FDI and exchange rate was observed. Literally, an increase in economic growth induced the increased levels of FDI and exchange rate. Therefore, economic growth in Tanzania lead to increased inflow of FDI and depreciation of the Tanzanian shilling relative to other international currencies. The study recommends macroeconomic policy makers in Tanzania to revisit and analyse the effectiveness of existing policies on macroeconomics determinants after financial sector reforms.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
AfDB	African Development Bank
BD	Budget deficit
BoT	Bank of Tanzania
CIA	Central Intelligence Agency
CMSA	Capital Markets and Securities Authority
CPI	Consumer Price Index
EAC	East African Community
ERP	Economic Recovery Programs
EXCH	Exchange Rate
FDI	Foreign Direct Investment
FEA	Foreign Exchange Act
GDP	Gross Domestic Product
IDP	Investment Development Path
IFEM	Interbank Foreign Exchange Market
IMF	International Monetary Fund
INFL	Inflation Rate
MoF	Ministry of Finance
NESP	National Economic Survival Programs
NGO	Non Government Organization
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Square
SADC	Southern Africa Development Community
SAP	Structural Adjustment Programs
UNCTAD	United Nation Conference on Trade and Development
USITC	United States International Trade Commission
URT	United Republic of Tanzania

CHAPTER ONE

INTRODUCTION

1.1 Background of the problem

Despite the modest macroeconomic stability that Tanzania has achieved so far, it is still classified as one of the world's poorest countries in the world in terms of per capita income (World Bank, 1990; CIA, 2014). Over recent years, the country has recorded a higher growth rate averaging at 6 percent largely on account of ample growth in the mining and tourism activities (AfDB, 2011). CIA (2014) posits that Tanzania has largely completed its transition to a liberalized economy, though the government retains a presence in sectors such as telecommunications, banking, energy, and mining. Furthermore, Salami, Kamara & Brixiova (2010) and URT (2002) put forward that the economy of Tanzania is largely agricultural in nature, which accounts for more than 25 percent of GDP and employs more than 75 percent of the labor force and accounts for nearly 85 percent of exports. Nevertheless, the World Bank, IMF, and bilateral donors have provided funds to rehabilitate Tanzania's aging economic infrastructure, including rail and port infrastructures that are important trade links for landlocked countries (CIA, 2014). Therefore the rehabilitations of infrastructures were expecting to revamp the growth of the economy through increased productivity induced by the increased markets resulting from improved infrastructures. However, still these initiatives seem to be insignificant since farmers are still complaining of retaining stocks of yields due to lack of markets.

Recently banking reforms have helped increase private-sector growth and investment and the government has increased spending on agriculture to 7 percent of its budget (Economic Surveys, 2014). The financial sector in Tanzania has expanded in recent years and foreign-owned banks account for about 48 percent of the banking industry's total assets (CIA, 2014). ISA (2011) comments the establishment of Tanzania Capital Markets and Securities Authority (CMSA) Act of 2004 to initiate a free flow capital and financial resources to support product and factor markets. Therefore, this has brought competition among foreign commercial banks which in turn resulted in a significant improvement in the efficiency and quality of financial services. Nevertheless, interest rates are still relatively high, reflecting high fraud risk.

Land marks the key resource for agricultural production in Tanzania and it is the resource employing the population of Tanzania. However, investment on land in Tanzania faces a lot of challenges since land in Tanzania is owned by the government, which can lease land for up to 99 years (USITC, 2005). Proposed reforms to allow for land ownership, particularly foreign land ownership, remain unpopular. Thus this policy on land is in one way affects foreign investments on agriculture which employs a big number of Tanzania's population.

Continued donor assistance and solid macroeconomic policies supported a positive growth rate, despite the world recession (ISA, 2013a). In 2008, Tanzania received the world's largest grant, the Millennium Challenge Compact grant, worth \$698 million, and in December 2012 the Millennium Challenge Corporation selected Tanzania for a second Compact; Dar es Salaam used fiscal stimulus and loosened monetary policy to ease the impact of the global recession (ISA, 2013b). In theory, budget deficit has a

negative impact on economic growth. This relation however, has been a subject of debate in all economic and social fronts, since the empirical evidence on their relationship is either ambiguous or inconclusive. The target of achieving sustained growth and maintaining macroeconomic stability is the objective of many developing, developed and under developing countries. Silly (2005) defines budget deficit as the expenditure of an entity which exceeds its earnings or incomes. In the absence of financing from external sources the deficit has to be carried to the next financial year. The budget deficit can be a result of delays in collection of revenues. Tanzania has experienced budget deficit for several decades.

Foreign Direct Investment (FDI) has been debated to be an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment. Carcovic and Levine (2002) noted that the economic rationale for offering special incentives to attract FDI frequently derives that foreign investment produces externalities in the form of transfer and spillovers. FDI is an important determinant of economic growth in Tanzania. Historically the availability of Natural resources has been the critical factor in attracting Foreign Direct Investment (FDI), because of need of industrializing nations of Europe and North America to secure an Economic and reliable source of minerals and primary products (Dunning,1993).

The availability of Natural resources has been found to be positively related to FDI flows to Africa (Onyeiwu and Shrestha, 2004; Asiedu, 2003). Kolstad and Tondel (2002) showed that countries rich in oil and other natural resources, such as Angola, are able to attract heavy FDI inflows. It is in the mining of high value minerals and

petroleum where Africa is particularly prominent as a host to FDI (Basu and Shrinivasan, 2002)

The availability of quality infrastructure is also an important determinant of FDI (Krugell, 2005). A good quantity and quality of infrastructure particularly roads, ports, water, power supply and telecommunication are very important determinants for FDI (Wheeler and Mody, 1992). Infrastructure facilities are expected to have a positive impact on FDI inflows.

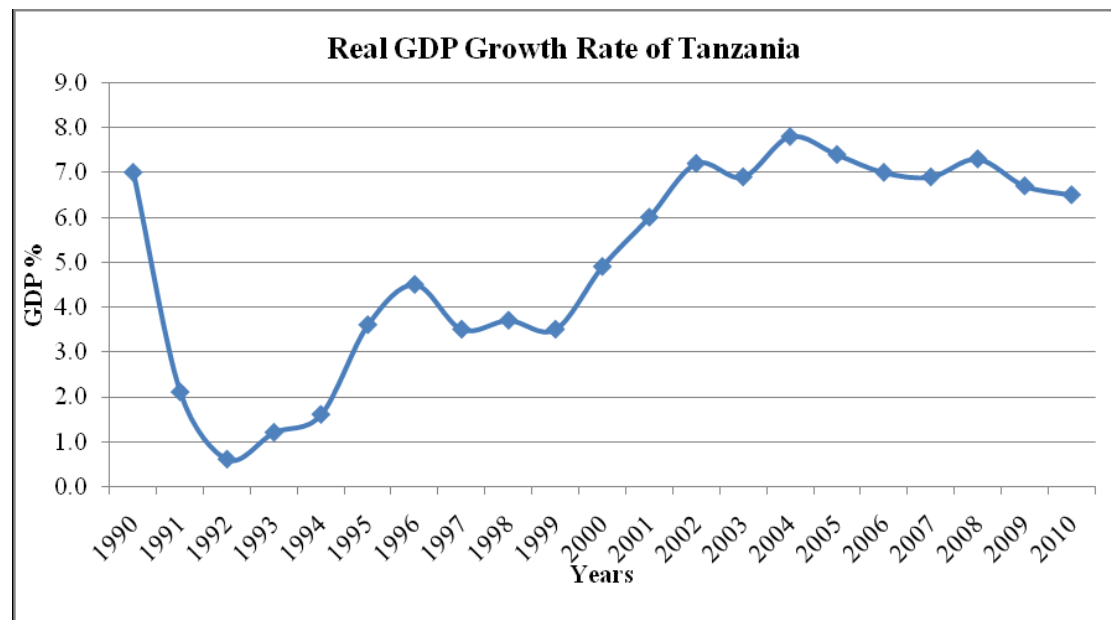
1.2.1 Economic growth trends in Tanzania

The macroeconomic performance of Tanzania for the period of 1990 to 2010 has been well. The growth rate increased; Growth Domestic Product (GDP) has averaged 7 percent per annum which historically high for Tanzania during year 2002 to 2009 (Lewis et al, 2011). GDP growth peaked at 7.8 percent in 2004 but severe and prolonged drought negatively affected the economy in year 2005. GDP growth has recovered to reach 7.4 percent in year 2008. However, due to the global economic and financial crisis, growth was projected to fall to 5 percent in year 2009 and then gradually increased to 7.5 percent in year 2012

On GDP growth rate, World Economic Outlook (WEO) 2012 the real GDP growth rate of Tanzania in 1990 there was an upward trend due to achievement of Economic reforms. (Muganda, 2004) maintained that “.....subsequent to the temporary setback in Macroeconomic Policy during the first half of the 1990s, the government achieved Macroeconomic stability in the late 1990”.After then, the growth of

Tanzania was shocked and downward from 7 percent to 2.1 percent in 1990 and 1991 respectively.

The trend continued to decline and slightly increased in 1995. The main reason for the decline was that Donor support fell in the early 1990s when the reform effort temporarily collapsed, it rose again when reform resumed under the Mkapa regime in 1995 (Muganda, 2004). Another reason for the growth rate to decline was the many conditions from the Donors to get the Foreign Aid. At the period between 1995 and 2000 the growth rate fluctuated and significantly increased to 6 percent in 2001.



Source: World Economic outlook (2002)

Figure 1.1: Real GDP Growth Rate of Tanzania from 1990 to 2010

1.2.2 Budget deficit

Budget spending is described to be a concern of Tanzanian economic problems. Solomon and Wet (2004) observe Tanzania as a country with high fiscal deficits for a prolonged period of time. The problem is explained to be caused by a variety of reasons including fiscal policies of the country for different periods of time. Dunn et al (2009) points out that in the late 1980s Tanzanian financial sector was state owned with Bank of Tanzania (BoT) as the source of government main financial instrument. So, the BoT dominated the banking system and had no control over monetary policy and thus it had to print money to finance the fiscal deficit (Fellenstein and Sarangi, 2002; Solomon and Wet, 2004; Dunn et al, 2009). However, changes were observed latter on after the financial reforms which enabled the country to be acquainted with expansion of the banking system which then altered changes on financing budget deficit in the country.

The expansion of the banking system had a remarkable change in the financial sector in Tanzania. The budget deficits were financed by a combination of monetization and domestic and foreign borrowing. Nevertheless, these finances to budget are claimed not to be suffice due to effects created by economic growth in the country. Solomon and Wet (2004) explain increased transparency and coordination with donors on microeconomic policy helped to mobilize financial support. Despite internal borrowing and support from multilateral donors still budget deficits in Tanzania exist and Tanzania's budget remains heavily dependent (Groarty, 2009 cited in Kasidi and Said, 2013). However, World Bank (2000) cited in AfDB (2010) observes fiscal deficits in Tanzania to fell from 8.9 percent in 1986 to 2.3 percent in 1995. On the

other hand Bank of Tanzania (2014) argues Tanzania recorded a government budget deficit of 8.90 percent of the country's Gross Domestic Product in 2013 which averaged negative 7.69 percent of the GDP from 1998 to 2013. Thus, budget deficits in Tanzania are not improving satisfactorily.

1.2.3 Inflation

The trend of inflation periods in Tanzania has historical roots since 1966. Solomon and Wet (2004) view Tanzania's inflation to be two digit figures starting the year 1966 and the trend continued to exist up to the end of 1970s with a radical increase reaching 30 percent. To minimize the problem of inflation in Tanzania, the government designed a package of reforms like the National Economic Survival Programme (NESP I and NESP II), Structural Adjustment Programme (SAP) and Economic Recovery Programme (ERP I and ERP II) (Kilindo, 1997; Solomon and Wet, 2004). Provided the successes achieved by these programmes, still inflation continued to be high ranging between 30.6 and 19.8 percent in 1986 and 1995 respectively provided short run objectives of ERP of cutting inflation by 20 percent. Nevertheless, in mid 1990s inflation was combated using tight fiscal discipline as a result of introduction of macroeconomic stabilization policies (Solomon and Wet, 2004).

Mnali (2012) suggests the implementation of institutional reforms and legal frameworks has been instrumental towards reducing the rate of inflation; between 1997 and 2005 inflation declined successfully from 16 percent to 4 percent respectively. Additionally, Muganda (2002) asserts that the improved budgetary

management procedures and operations of a cash budget system reduced inflation from the 1995 level of about 27 percent to less than 5 percent. Thus, from 1995 to early 2000s Tanzania had a record of decline inflation rate at a significant level to about a single digit (Treicher, 2005; Muganda, 2004).

The literature on the trend of inflation in Tanzania since financial reforms is mixed. The period between the mid 1990s to early 2000s is explained to be the period of macroeconomic stabilization which implied tight fiscal policies resulted to a decline of inflation (Treicher, 2005). For instance the year 1994 to 2002, inflation was 37.1, 26.5, 21.0, 16.1, 9.8, 9.0, 6.2, 5.2 and 4.6 in 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001 and 2002 respectively (Muganda, 2004). However, combining the trend of inflation suggested by Msuya (2007), Abdulla, Hongzhong and Othman (2012) and Mnali (2012), inflation in Tanzania from 2002 to 2011 had an alternate decreasing and increasing as years were increasing. Thus, from 2002 inflation was 4.5, 3.5, 4.1, 4.4, 6.2, in 2002, 2003, 2004, 2005 and 2006 respectively (Msuya 2007; Abdulla, Hongzhong and Othman, 2012 and Mnali, 2012). Mnali (2012) contends that between 2006 and 2007 inflation rate increased by 7 percent and it reached 12 percent in 2009 while in 2010 it dropped to 5 percent and rose again in 2011. Therefore, from 1998 to 2007 were periods of with a significant good record of inflationary period in the country where as the periods between 2009 and 2011 were not economically better periods since inflation increased to a double digit similar to the periods before financial reforms in the country.

The reasons for existing trends of inflationary periods in Tanzania are explained differently. Solomon and Wet (2004) describe government policies including

strategies for reducing inflation which focused on tight monetary policy and increased output production. Mnali (2012) considers Foreign Direct Investments (FDIs) to have positive effects on stable inflation rates between 1997 and 2011. Additionally, Muganda (2004) views the improvement of budgetary management procedures and operations of budget systems to reduce inflation in the country. Gabagambi (2013) suggests liberalization efforts to have effects of reducing inflation rate in Tanzania despite the fact that at first inflation was still high. Moreover, Rutayisire (1986) and Kilindo (1997) argues that inflation in Tanzania to be both structural and monetary since the chain of events is responsible for inflationary experience due to oil prices increases, increased price of imported goods, worldwide recession leading to the decline of exports, decline of agricultural production and the government resort to domestic borrowing from the banking system. However, URT (2008), the economics of Tanzania was subjected to further inflationary pressure as domestic oil and food prices continue to increase and inflation reached 10.3 percent. Global oil and food prices declined sharply in the last quarter of year 2008 but local pump prices did not decline and food shortage in neighboring countries continued to put pressure on local food prices (Economic Survey, 2008). Therefore, inflation in Tanzania is caused by a variety of factors despite government efforts to combat the problem.

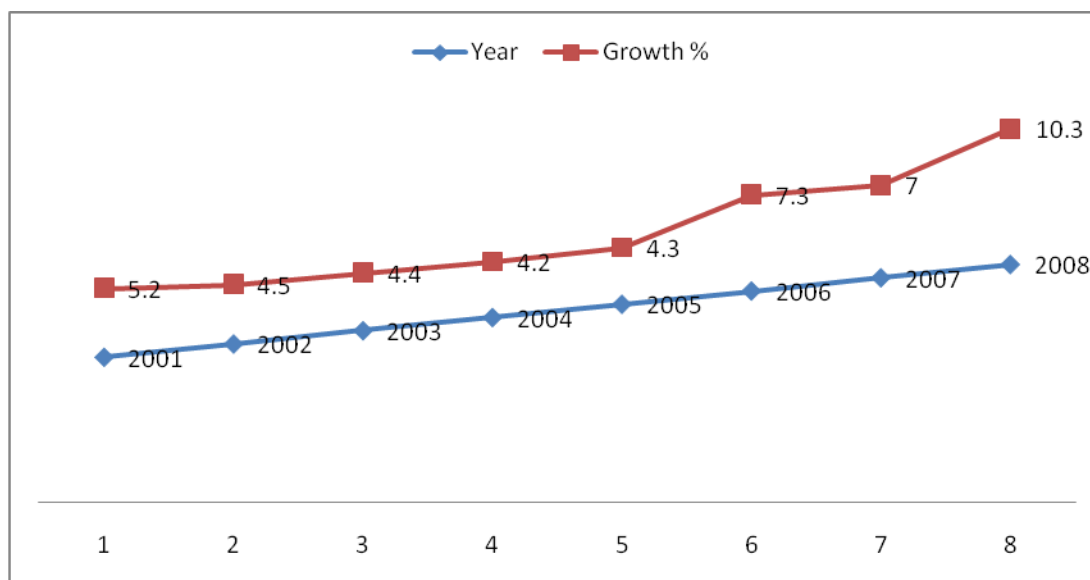


Figure 1.3 Inflation rate from year 2001 to 2008 in Tanzania Table 1.1 Inflation in

Table 1.1 Inflation in Tanzania Compared to Neighboring Countries (annual

Country	Year 2010	Year 2011	Year 2012
Tanzania	5.5%	12.7%	16.1%
Kenya	4.1%	14%	9.4%
Uganda	4.4%	14.9%	11.8%
Zambia	8.5%	8.7%	6.6%
Mozambique	12.7%	10.4%	2.1%
Malawi	7.4%	7.6%	21.3%

SSA	7.4%	9.3%	9.1%
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Source: President's Office Planning Commission Dar es Salaam

1.2.4 Exchange rate

One of the financial reforms in Tanzania involved the repealing of some legislations and introducing new ones to facilitate financial objectives reflecting the new reform. The Foreign Exchange Act (FEA) of 1992 was introduced to provide enabling environment for efficient allocation of foreign exchange resources (Odhiambo, 2012). The reforms in the financial sector in Tanzania including Foreign Exchange Act (FEA) of 1992 had impacts to the economy of Tanzania (Odhiambo, 2010; Odhiambo, 2012; Mbogela and Nyamurunda, 2014). The Interbank Foreign Exchange Market (IFEM) was introduced aiming at increasing the efficiency of the allocation of foreign exchange reserves by facilitating market determined exchange rate (Odhiambo, 2012). Thus, since then Tanzanian shilling is market determined with only sporadic official interventions by the central bank to smooth out excessive volatility (AfDB, 2004; AfDB, 2011). Thus, since then the exchange rate is determined by the forces of the market and has shown upward and downward movements for different periods of time (Haji and Jianguo, 2014).

AfDB (2004), Odhiambo (2010) and Mbogela and Nyamurunda (2014) consider the Tanzanian shilling to experience gradual depreciations over time. AfDB (2004) argue the Tanzanian shilling to depreciate by 7.6 percent between June 2001 and end of June 2002 and had depreciated by a further 7.2 percent by end June 2003. The main reason to these depreciations are said to be low export sales which is due in part to the fall of traditional on the world market. However, a study by Haji and Jianguo (2014)

suggest the exchange rate of the Tanzanian shilling to experience both appreciations and depreciations in the sense that there were times when the shilling improved against other international currencies. For instance, from July 2009 exchange rate increased by 24.5 percent to Tshs 1672 per USD in November 2011 and then it decreased by 9.2 percent from November 2011 to Tshs 1518.33 per USD in May 2012, then it increased by 6.1 percent from May 2012 to Tshs 1611.67 per USD in July 2013 then decreased by 2.3 percent from July 2013 to Tshs 1574.01 per USD in December 2014 (ibid).

Despite the downward and upward swings of the Tanzanian shilling with respect to other currencies, still the improvement is explained not to be satisfactory. Therefore, the efforts to reform the financial sector in Tanzania is not so much impressive. Mbogela and Nyamrunda (2014) conclude that the Tanzanian shilling exchange rate has been lower since the implementation of SAP and have had long-run impacts on the economy of Tanzania. On the other hand Odhiambo (2010) contends that exchange rate depreciation in Tanzania has reduced the quality of investment. The currency depreciation leads to higher domestic prices and inflationary pressures on the real cost imported fuel and other inputs (AfDB, 2011). Despite some strengths described to be observed through financial liberalization in Tanzania, the move is discussed to result into a number of challenges such as unstable exchange rate (Odhiambo, 2010) and other effects in the economy. Table 1.2 below summarizes the exchange rate trend of Tanzania since 1995 to 2003 as shown hereunder in table 1.2.

Table 1.2: Trends in Selected Macroeconomic Indicators

Indicator	Year 1995	Year 1996	Year 1997	Year 1998	Year 1999	Year 2000	Year 2001	Year 2002
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Real GDP Growth (%)	3.6	4.2	3.3	4.0	4.7	4.9	5.7	6.2
Inflation annual average (%)	27.1	21.0	16.1	12.9	7.8	6.0	5.2	4.5
Exchange rate (Tsh/USD) annual average	574.8	580.0	612.1	664.7	744.8	808.4	876.4	978.9
Fiscal balance (before Grants) % of GDP	0.1	-1.7	-2.3	-2.3	-5.8	-4.6	-6.6	-2.6

Source: President's Office, Planning and Privatization, 2003 and Bank of Tanzania, monthly economic review, December 2003/January 2004.

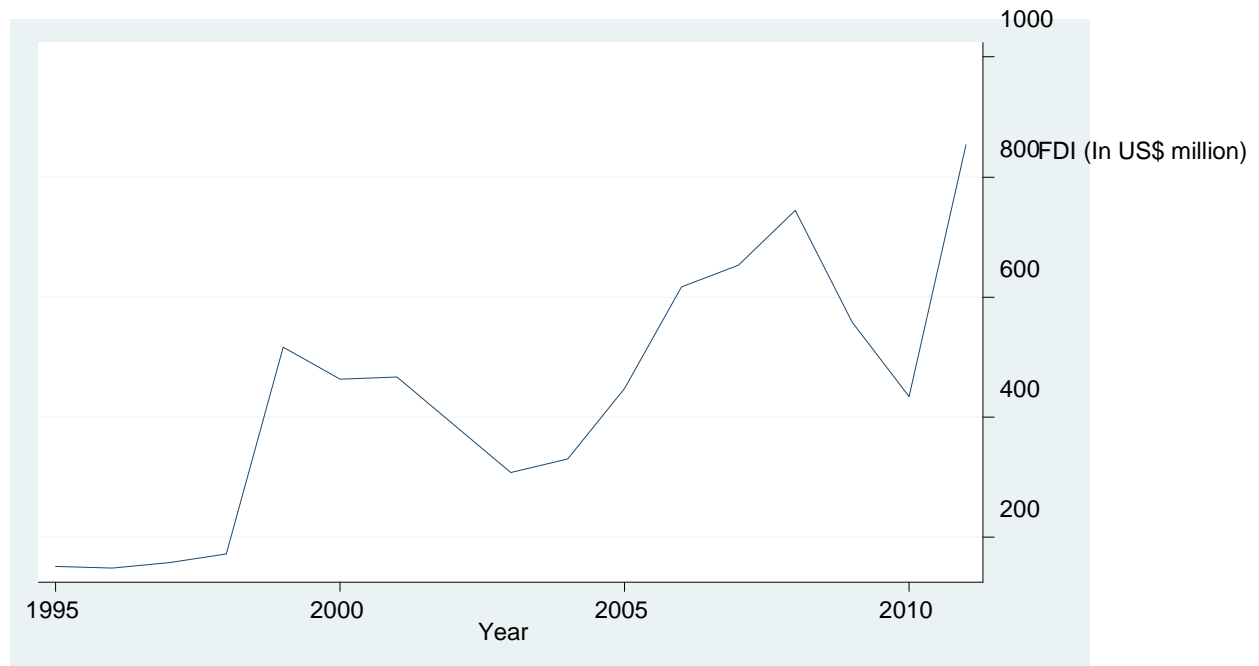
1.2.5 Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) in Tanzania is explained to be impressive over years despite a fall in Sub Saharan Africa (Msuya, 2007). However, the increase of FDI flow in African countries including Tanzania is influenced by implementing financial reforms in early 1990s. The major institutional and legal frameworks carried by the government in Tanzania since mid 1980s resulted to the increase of the inflow of FDI in Tanzania (Mnali, 2012; Abdulla, Hongzhong and Othman, 2012; Mpaju 2012). URT (2005) cited in Msuya (2007) observes that FDI inflow in Tanzania are headed by OECD followed by SADC (24.5 percent) and EAC (7.3 percent). Nevertheless, Utz (2008) sees manufacturing industry as the biggest recipient of FDI by 34 percent of FDI stock, mining 28 percent, tourism 8.1 percent of stock of FDI at the end of 1999 and agriculture accounted 6.7 percent of FDI stock despite its importance and potentiality for the economy of Tanzania. On the other hand, Msuya (2007) views the distribution of FDI in Tanzania to be concentrated in regions endowed by with a variety of natural resources and those with better social and economic infrastructure especially Dar es Salaam, Shinyanga, Mwanza, Arusha and Manyara. Nonetheless, the mining sector has overtaken other sectors especially the manufacturing industry on FDI inflows particularly in 2000s (Utz, 2008; Mpaju, 2012).

FDI inflows are explained to impact the economy of Tanzania differently. Studies by Balasubramanyam and Wei (2004) suggest an improvement of FDI in Tanzania from 0.9 percent to 25 percent between 1980 and 2002 a situation which has allowed economic growth in Tanzania. Utz (2008) observed that by 2000 FDI contributed about 5 percent of Tanzanian GDP. Again, Mnali (2012) suggests Tanzania to lead in attracting FDI in East African region during 2011 and the inflow of FDI to Tanzania viewed to be significant from USD 12 million in 1992 to unpredictable record of USD 1095 million in 2011. Msuya (2007) studies reveal that FDI in Tanzania has shown a significant efficient in economic growth and poverty reduction since small holders close to factories especially Mtibwa sugar their welfare showed improvement. Mpaju (2012) identifies the relationship between FDI and employment creation in Tanzania in the sense that the majority of Tanzanians have been employed in various sectors such as mining, manufacturing industry and trading.

Despite the benefits experienced from increased inflows of FDI in Tanzania, their impact on economic growth is not reasonable as it was expected. FDI is explained to be dominant in just few sectors of the economy like mining, trade and manufacturing industry (Osakwe and Dupasquier, 2005; Utz, 2008; Mpaju, 2012) while the agricultural sector which employs more than 80 percent of the Tanzanian shared a minimal inflow of FDI (UNCTAD, 2002; Utz, 2008). Msuya (2007) observes FDI distribution in Tanzania to be highly concentrated in few regions especially those with ones endowed with a variety of natural resources and those with better social services and infrastructures. This shows that FDI distribution in Tanzania is uneven hence many regions are marginalized.

Mnali (2012) describes a number of challenges facing FDI in Tanzania; lack of designated investment projects, poor infrastructure (feeder roads) and lack of adequate reliable power. Additionally, Osakwe and Dupasquier (2005) consider lack of favourable investment climate to influence low FDI trends in Tanzania to be a factor affecting FDI. Moreover, a study by Abdulla, Hongzhong and Othman (2012) consider high costs of labour in Tanzania compared to other countries especially costs related employees' benefits, tariffs and poor infrastructures downgrades the flow of FDI. Therefore, despite the increase of FDI in Tanzania, still challenges which make FDI to be inefficient for influencing economic growth in the country. Nevertheless, Utz (2008) consider FDI to decline in 2004 to about 2.4 percent of the GDP due to completion of privatization and investments in the mining sector. However, World Bank (2009) contends that the government of Tanzania has actively pursued FDI in recent years creating tax incentives and reducing procedural requirements as a result FDI inflows expanded for 3 years successively. The trend of FDI was shown in the figure 1.4 hereunder.



Source: Bank of Tanzania 2012

Figure 1.4 FDI to Tanzania 1995 to 2011

1.3 Problem statement

From the mid 1990s Tanzania has been implementing a number of macroeconomic reforms in an attempt to revamp its economy (Bigsten & Danielsson, 1999). As a consequence, the economy has been growing at a reasonable rate averaging at 6 percent which is above the Sub-Saharan Africa average (IMF, 2008). The determinants of economic growth in Tanzania after macroeconomic reforms namely budget deficit, inflation, FDI and exchange rate are stated to have certain features which impact economic growth. Tanzania is viewed as a country with high fiscal deficits (Solomon and Wet, 2004). Fiscal policies of the country in different periods of time are discussed to be the cause of deficits (Dunn et al, 2009). The banking system was dominated by the government (ibid). BoT had no control over monetary policy and had to print money to finance the fiscal deficits (Fellenstein and Sarangi,

2002; Solomon and Wet, 2004; Dunn et al, 2009). The financial reforms brought changes in the banking system which altered changes on financial budget deficit. Budget deficits were financed by monetization and domestic and foreign borrowing; despite internal borrowing and support from multilateral donors, budget deficits still exists (Groarty, 2009 cited in Kasidi and Said, 2013). Thus, budget deficits in Tanzania do not improve and creates devastating effects on economic growth.

Tanzania has recorded trends of high inflations over periods of time (Solomon and Wet, 2004). The government designed a package of reforms to rectify the situation over different time periods (Kilindo, 1997; Solomon and Wet, 2004). Inflation was combated through tight fiscal discipline as a result of introduction of macroeconomic stabilization policies (Solomon and Wet, 2004). Between 1997 and 2005 inflation declined due to implementation of institutional reforms and legal frameworks (Mnali, 2012). However, improved budgetary management procedures and operations of budget systems reduced inflation from about 27 percent to less than 5 percent (Muganda, 2002). Therefore, inflation managed to decline to about a single digit (Treicher, 2005; Muganda, 2004). Nevertheless, inflation tended to have alternate increases and decreases over periods of time and the latest record of 12 percent and 5 percent in 2009 and 2010 respectively (Mnali, 2012).

The Foreign Exchange Act of 1992 of Tanzania had impacts on the economy of Tanzania (Odhiambo, 2010; Odhiambo, 2012; Mbogela and Nyamurunda, 2014). Since then the Tanzanian shilling is market determined with few official interventions by the BoT to smooth volatility (AfDB, 2004; AfDB, 2011). Therefore, the determination of the exchange rate through market forces has caused upward and

downward movements for different periods of time (Haji and Jianguo, 2014). However, the Tanzanian shilling depreciates over time (Haji and Jianguo, 2014; AfDB, 2004; Odhiambo, 2010). Thus, the efforts of the government to reform the financial sector is not impressive because it has long run impacts on the economy of Tanzania (Mbogela and Nyamurunda, 2014) among the effects being lowered investments (Odhiambo, 2010).

FDI in Tanzania is explained to be impressive over years (Msuya, 2007). The implementation of financial reforms in early 1990s is one of the reasons. Institutional reforms and legal frameworks since 1980s resulted to the increase of the inflows of FDI in Tanzania (Mnali, 2012; Abdulla, Hongzhong and Othman, 2012; Mpaju, 2012). However, few sectors of the economy such as mining and manufacturing industry receive the highest share of FDI (Utz, 2008). Nevertheless, the distribution of FDI inflows is uneven (Msuya, 2007) thus leaving other places especially those which are not endowed of natural resources and better social services like good infrastructure (Utz, 2008; Mpaju, 2012; Msuya, 2007). FDI has created employments in various sectors such as mining, manufacturing industry and trading (Mpaju, 2012). Despite the benefits, FDI has not shown reasonable economic growth as it was expected due to marginalization of other sectors such as agriculture which employs the majority of Tanzania's population (UNCTAD, 2002; Utz, 2008). Thus, provided the existence of benefits in terms of economic growth, the macroeconomic policy determinants are explained not to be impressive for economic growth in Tanzania. Thus, the study looked at "Macroeconomic Policy Determinants of Economic Growth after Financial Sector Reforms in Tanzania."

1.4. Research objectives

1.4.1. Overall objective

The main objective of this study is to investigate the macroeconomic policy determinants on economic growth in Tanzania after financial reforms.

1.4.2. Specific objectives

- (i) To examine the effect of budget deficit on economic growth.
- (ii) To examine the relationship between economic growth and inflation.
- (iii) To examine the relationship between exchange rates and economic growth.
- (iv) To examine the relationship between foreign direct investment and economic growth.

1.5 Research hypotheses

- (i) There is no statistically significant effect of budget deficit on Gross Domestic Product (GDP) growth.
- (ii) Inflation rate does not affect Gross Domestic Product growth..
- (iii) Exchange rate does not affect Gross Domestic Product growth.
- (iv) Foreign Direct Investment does not affect Gross Domestic Product growth.

1.6 Significant of the study

The study is helpful to individuals, organizations and the government in particular in different perspectives; for an individual the study shades light on how economic policies of the state are influenced by the macroeconomic policy determinants. Again, the study is useful for policy makers of the state and economists at large to identify

the key determinant which need more attention to be focused on so as to minimize its effects on the economy. Again, the study is significant for researchers to make insights for the observed relationships of the key variables of the study to validate the existence of the problem under study.

For an organization particularly the one involved in the business sector, the study gives knowledge on speculating better economic periods for the organization to decide on the quantity of goods and services to be produced at different times. Again, study shades light for business organizations to speculate on government policies provided a given economic event which may force the government to make reforms. Furthermore, the business may benefit from the study by being acquainted with analysis of better economic events for business policy decisions of the organization.

The study is significant to the government on the sense that it can be able to analyse policy issues existing in relation to their ability to achieve macroeconomic policy objectives. Additionally, the study shades light for policy makers of the state to evaluate the effectiveness of the macroeconomic policy determinants on influencing economic policies of the state.

1.7. Organisation of the study

The study is organized into five chapters. Chapter one provides the need to carry out the study by highlighting critical issues in the background of the study. The general and specific objectives were provided to guide the direction of the study. However, the study states the significance of the study and the limitations of the study were established. Chapter two discusses the both the theoretical and empirical literature

reviews linking the study. The monetarist and crowding-out effect models were used as theoretical mirrors of the study. Nevertheless, the conceptual framework is described to shade light on the relationship of the variables of the study.

Chapter three is about the methodological aspect of the study. A total of 76 observations from quarterly data covering 1995 to 2013 were used to run estimations for unit root tests and OLS cointegration regression analysis. The results were tabulated and described to easy the interpretation of the findings. Chapter four presents the findings of the study and explains the main themes in relation to research hypotheses. Chapter five finalizes the study by highlighting the implications of the findings. However, concluding remarks are provided to summarize the nature of the

problem under study. Nevertheless, recommendations are provided to shade light how the key players should take the problem into considerations.

1.8.1 Study limitations

First, Shortage of time was a challenging factor to the study because the researcher is working with Non-Governmental Organization (NGO) where he is utilizing his day time on work. However, the researcher utilized his night time and weekends to accomplish the findings.

Secondly, financial constraints affected the study since the researcher had other family obligations including paying for schools fees for children. Nevertheless, the researcher collected data from secondary data sources including government

publications, official government websites especially the BOT official website and international organizations websites such as IMF, OECD and UNCTAD.

Three, the study used linear interpolation to find quarterly data

.

CHAPTER TWO

LITERATURE REVIEW

2.1. Overview

This chapter reviews the previous studies relating to the problem under study. The consulted literature explores the relationship between budget deficit, inflation rate, exchange rate, foreign direct investment and economic growth of Tanzania. Therefore, the chapter explores in detail how the macroeconomic policy determinants relate to other findings developed in Tanzania.

2.2. Theoretical literature review

The theoretical literature with respect to this study covered two theories namely the Monetarist theory and the Crowding out Effect theory. The monetarist theory main focus is to explain the role of money supply in determining the equilibrium level of real GDP (Boyes and Melvin, 2013; 2015). Therefore money supply is viewed as a mechanism towards economic growth. Studies by Solomon and Wet (2004) and Traicher (2005) in Tanzania reveal the impact of tight monetary policy on stabilization of the especially during the mid 1990s and it resulted into reduced inflation. Hafer (2005) points out that monetarists believe changes in the supply of money and monetary policy actions are critical in explaining changes in the economy. Thus, the changes experienced in Tanzania during tightened fiscal policies are clearly better explained by the monetary policy. Different studies tried to show the relationship between inflation and GDP growth. According to Kasidi and Mwakalemela (2013) observations, a persistent increase in the general price level has negative impacts on economic growth in Tanzania. However, the relationships

explained are likely to be a result of implementing certain financial policies of the state.

The monetarist believes that changes in monetary policy (fiscal policy) have only short term effects on real GDP: in long run the effect of change in money supply is reflected in change of the price level (Boyes and Melvin, 2015). Solomon and Wet (2004) suggest the increased level of economic growth in the country by 10 percent lowered permanently prices by 35 percent. Thus, the findings are proportional to the monetarist views which infer that monetarism focus on the long run relation between money and the economy; the long run monetarism view suggest that changes in growth rate of money supply relative to the growth of real output (GDP) are directly related to changes in the rate of inflation. Therefore inflation as an output of fiscal policies of the state has been affecting the output (GDP) of the economy in the long run. Since literature suggest the existence of the relationship between GDP and inflation in Tanzania, the monetarist theory was relevant to the study.

The crowding out effect is the theory explaining how budget deficit leads to higher real interests which retard private spending (Gwartney et al, 2011). The crowding out effect implies that the expansionary fiscal policies will have little effects on demand, output (GDP) and employment. The main theme embodied in the crowding effect model is that the reduction of private spending as a result of higher interest rates will offset additional spending due to deficits. Tanzania is one of the countries facing deficits for a long period of time (Solomon and Wet, 2004). The deficits are said to

impact economic growth thus, a negative relationship between budget deficit and economic growth.

The theory concentrates in explaining the relationship between budget deficit and interest rates and how they crowd out the economy. However, in an open economy the theory is described to lead into other secondary effects: an inflow of capital (FDI), an appreciation of the dollar (exchange rate) and reduction in net exports (Gwartney et al, 2011). Therefore, the theory is best in explaining the macroeconomic policy determinants (FDI, exchange rate and budget deficit) of Tanzania. Gwartney et al (2011) observe that private investment is crowded by the higher interest rates, reduces output of capital goods and the future stock of capital (heavy equipment, other machines and buildings). Therefore the theory suggests deficits to have adverse effects inflows for the case of this study (FDI) and tend to retard the growth of productivity and income (GDP). Again from the crowding out effect point of view, budget deficits lead real interests to appreciate which in turn lead into appreciation of the domestic currency relative to other international currencies in an open economy. Thus, since the crowding effect theory sees budget deficits to affect output (GDP), exchange rate and FDI in an open economy, the theory becomes relevant to the study.

2.3 Review of empirical studies on macroeconomic determinants in Tanzania

Tanzania's economic growth has shown different trends in different periods of time. The literature on economic growth of Tanzania is mixed depending on time and policies regarding strategies for economic growth. Babu et al (2014) suggest economic growth in Tanzania to be strong since early 2000s despite its trend to be

uneven. Odhiambo (2011) argues the year 2000 Tanzania's GDP growth rate increased significantly to about 5.1 percent which was the highest GDP growth rate recorded for more than a decade. Christiaensen, Savastano and Sarris (2006) observe Tanzania's economy in early nineties to be characterized by macroeconomic disequilibrium and poor economic growth. Thus, despite the policies (SAP, ERP and NESP) which were put in place to alter the level of economic growth, still the level remained a slow movement (Kasidi and Said, 2013).

To rectify the situation of economic growth which Tanzania had before 1990s, the country has been implementing various strategies which have contributed to economic growth (Babiker, Hamad and Mtengwa, 2014). In mid 1990s Tanzania resumed its reforms with a clear and sustained commitment to macroeconomic stability through sound fiscal and monetary policies as foundations of economic growth (Christiaensen, Savastano and Sarris, 2006). Odhiambo (2011) argues, the real sector development as measured by the economic growth rate has remained either high or modest throughout the post reform period. Between 1991 and 2000, Tanzania recorded an average annual percentage GDP growth rate of about 3 percent (Odhiambo, 2011; Odhiambo, 2012). In 1991 and 1992 Tanzania recorded a low annual GDP growth rate of about 2.1 and 0.6 respectively while the year 2000 the GDP growth rate increased to 5.1 percent (Odhiambo, 2011).

Odhiambo (2012) identifies the trend of economic growth in Tanzania to have an upward and downward swing as follows: GDP growth rate between 1991 and 2000 was about 3 percent at the growth rate of 0.584 percent annually, the rate however increased to 4.6 percent, in 1996. In 2000 the real GDP growth rate further increased

steadily from 4.9 percent to 6 percent in 2001 and 7.2 in 2002 although the rate slightly decreased to 6.9 in 2003. It later increased significantly to 7.8 percent in 2004 and the rate decreased to somewhat between 2004 and 2006 from 7.8 percent in 2004 to 7.4 percent in 2005 and later to 6.7 in 2006. It later increased slightly to 7.1 percent in 2007 and 7.4 in 2008. These rates of economic growth in Tanzania are explained to be a result of economic reforms implemented since 1980s (Benson et al, 2006) caused by macroeconomic environment resulting from macroeconomic policies.

The relationship between economic growth and macroeconomic variables namely inflation, budget deficit, foreign direct investment and exchange rate are explained in different perspectives. Kasidi and Mwakalemela (2013) study on the relationship between economic growth and inflation indicated that a persistent increase in the general price level has a negative impact on economic growth in Tanzania. From their observations they construed that as the general price level (inflation) goes up by 1 percent, economic growth (GDP) goes down by 48.105 percent and the analysis showed that 64 percent of the factors affecting economic growth in Tanzania are explained by inflation and only 36 percent were captured by other factors. However the above findings varied from those of Solomon and Wet (2004) which suggest the increased level of economic growth in the country by 10 percent lowered permanently prices by 35 percent. The differences of Kasidi and Mwakalemela (2013) findings from Solomon and Wet (2004) findings relies on the extent to which one variable influence the other but are similar on the grounds that inflation has a negative effect on economic growth in Tanzania.

Lema and Dimoso (2011) observed an existence of independence between FDI and economic growth in the sense that neither FDI inflows nor economic growth causes one another. This is because Tanzania's FDI inflows have led to economic growth and similarly GDP growth in Tanzania has been attracting FDI inflows. However, Moses, Joseph and Yao Shen (2013) cited in Arabi (2014) findings on the causality test on the relationship between FDI, GDP growth rate and exports of Tanzania using the annual data spanning from 1980 to 2012 the cointegration found that there is a long run association between FDI and economic growth. Nevertheless, Njau, Obeid and Patrick (2015) indicated that FDI inflows have boosted economic growth in Tanzania. Studies by Odhiambo (2012) results of Granger Causality test suggest a unidirectional causal flow from investment to economic growth although there is a feedback short run causal flow from economic growth to investments. Therefore, the literature on the relationship between FDI and economic growth in Tanzania is mixed due to variations of the findings across studies.

The exchange rate in Tanzania show downward and upward movements for different time periods (Haji and Jianguo, 2014). Studies on the relationship between exchange rate and economic growth in Tanzania are limited thus offering little explanations on the relationship between the two variables. However, Studies by Mbogela and Nyamurunda (2014) suggest the lowering of exchange rates in Tanzania leads to a long run increase to the value of GDP. Additionally, a study by Odhiambo (2011) on tourism development and economic growth in Tanzania (Granger cause) show a short run bidirectional causality between economic growth and exchange rate in Tanzania. AfDB (2004) recommend the depreciation of a shilling since 2002 to be triggered by

low export sales which has been due in part to the fall of traditional exports on the world market.

Budget deficit in Tanzania is said to be a concern of economic problems (Solomon and Wet, 2004). The expansion of the banking system in Tanzania during financial reforms managed to change the status quo of the existed level of deficit. However, despite the reforms which necessitated both internal and external borrowing, still budget deficits existed (Groarty, 2009 cited in Kasidi and Said, 2013). To explore the relationship between budget deficit and economic growth in Tanzania, studies reveal different results. A study by Aworinde (2013) on Budget deficits and economic performance (Granger cause) show an evidence that the real GDP Granger cause a fiscal deficits in Tanzania, Botswana, Ghana and Tunisia. However, Kasidi and Said (2013) results of the regression analysis found that there is a negative relationship between external debt and debt servicing on economic growth of Tanzania. From Kasidi and Said (2013) observations, when GDP increase by 1 percent, external debt decrease by 9 percent. Thus, this observation justifies the existence of the relationship between budget deficit and economic growth in Tanzania because when the economy grows the government demand little fiscal assistance from abroad. Agarwal (1980) found out that FDI is considered to be a function of output of foreign firms in the host country. It is usually approximated by the size of the market, captured by the level of the GDP (Bandera and White, 1968). Other researchers used distinct measures to show that level of development and market capacity play a decisive role in attracting FDI (Wang and Swain, 1995). Another way of attracting FDI inflows concerns the stage of Economic development and Investment Development Path (IDP) of the

recipient country (Barrell and Paint, 1997). A well developed existing market infrastructure is expected to support FDI decision (De Menil, 1999)

2.4 Research gap.

The gap of this study is justified by the main four aspects; there are less study examined the relationship of the four macroeconomic determinants of Tanzania simultaneously across studies. Again, there are variations of results over the variables examined (inflation, foreign direct investment, exchange rate and budget deficits) and economic growth in Tanzania. However, there are limited studies on the relationship between exchange rate and economic growth in Tanzania especially when Time series used. Lastly, government macroeconomic policies to improve the performance of the macroeconomic determinants over time have failed. Thus, the gap justifies the need for the study.

2.5. Conceptual definitions

2.5.1 Gross domestic product

Gross domestic product is defined as the monetary value of all the finished goods and services produced within a country's borders in a specific time periods; it is usually calculated on an annual basis. It includes all of private and public consumption, government outlays, Investments and Exports less Imports that occur within a defined territory (George, 2007). It can be expressed in the form of equation hereunder:

$$\text{GDP} = \text{C} + \text{G} + \text{I} + \text{NX} \dots\dots\dots 1$$

where C is all private consumption or consumer spending in a Nation`s Economy is the sum of government spending, I is the sum of all the country`s businesses spending on capital, NX is the Nation`s total net export calculated as total export minus import (NX = Export – Import).

Gross Domestic Product (GDP) can also be defined as an aggregate measure of production to the sum of gross values added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies on product not included in the value of their output).Gross Domestic Product (GDP) is the standard measure of value of the production activity (goods and services) of resident producer units (OECD Regions at Glance, 2009).Godwin (2007) defined Economic growth as an increase in real gross domestic product (GDP) or total market values of output of goods and services produced by workers and capital within a country during a particular period usually a year. In other words, it is the National Income of a country as measured by the output approach which is equal to the sum of all values added in the Economy. It can be valued at current prices to get the nominal GDP and it can be valued at the base year price to get real GDP.

2.5.2 Budget deficit

Budget is the statement of a government`s planned receipts and expenditures for some future period, normally a year. It is actually accompanied by a statement of actual receipts and expenditures for the previous period. A budget deficit means that spending exceeds receipts (Oxford Dictionary of Economics, 2012).In Tanzania

budget deficit is defined as the excess of sum of total expenditure over revenue receipts. Budget deficit can also be defined as the amount by which a government, company, or individual's spending exceeds its income over a particular of time.

2.5.3 Inflation rate

Inflation rate is defined as the rate at which the general level of price for goods and services is rising and subsequently purchasing power is falling. Inflation is defined as a rise in the general level of price of goods and services in an Economy over a period of time (Shim J.K. et al., 1995).

2.5.4 Exchange rate

Exchange rate is defined as the rate at which one currency may be converted into another. The exchange rate is used when simply converting one currency to another for trading in the foreign exchange market. According to Giancarlo (1995) Exchange rate is defined as price the comparison of one currency in terms of another currency.

2.5.5 Foreign direct investment

Foreign direct investment is defined as an investment involving a long term relationship and reflecting a lasting interest and control by a resident entity in one economy. It is also defined as 'investment made to acquire lasting interest in the enterprises operating outside of the Economy of the Investor' (Ashis K.Vaidya, (2006). Foreign Direct Investment (FDI) is the name given to the process where a firm from a country provides capital to an existing or newly created firm in another country (Jonathan Jones and Colin Wren (2006).Foreign Direct Investment (FDI)

refers to long term participation by a country A into country B. It involves participation in management, joint venture, transfer of technology and expertise (Shim J.K.et al, 1995)

2.6 The conceptual framework

The conceptual framework describes the key variables determining macroeconomics policy of economic growth in Tanzania. Budget deficit, inflation rate, exchange rate and FDI are the variables reflecting decision to formulate financial reforms in the country. Budget deficit as a macroeconomics policy determinant depends on government expenditure and taxes. Expansion of the government expenditure demands more money to supplement the budget. However, taxes are the main source of government revenue thus the budget of the government depends on the capacity of agency given power to collect government revenues. Therefore, policy makers of the state focus will be on the capacity of the government to finance deficits through taxes and the size of the government (government expenditure) so as to come up with a valuable macroeconomics policy.

Inflation rate is observed as considerable for policy formulation in relation to GDP. Inflation and GDP are related because inflation adversely affects GDP. To formulate a macroeconomics policy for GDP growth, monetary policies and demand and supply of goods and services plays a critical role. Monetary policies may cause inflation in the economy; allowing more seignorage, additional money circulation persists in the economy hence inflationary periods in the economy thus a negative effect on GDP. However, supply and demand of goods and services are efficient to impact the level

of GDP. More demand of goods and services in expense of their scarcity raise the levels of inflation. For a policy to be effective on reducing inflationary periods in the economy; monetary policies of state and demand and supply of goods and services should be observed by policy makers as key variable to stabilize the economy.

Exchange rate affects economic growth; macroeconomic policy on economic growth focus on two variables of exchange rate (exports and imports). To improve the performance of exchange rate, macroeconomic policies need to analyze the efficiency of exports to import a basket of goods and services from abroad. Therefore, macroeconomics policy should strive to strengthen the capacity of exports to import goods and services to appreciate the domestic currency against international currencies.

FDI is a result of encouraged investments in various sectors of the economy. For FDI to perform several factors are involved; infrastructure, political ideology, exchange rate and taxes. The existing political ideology influences the formulation of viable policies for macroeconomics policy on economic growth. However, better infrastructures such as roads, railways, and airports are significant to support other variables for FDI. An appreciated exchange rate would encourage investors to invest in an economy. Nevertheless, the level of policies on FDI is also significant on influencing capital flow in the country. Thus, for a macroeconomics policy to be significant it should focus on policies regarding the variables embodied in the FDI.

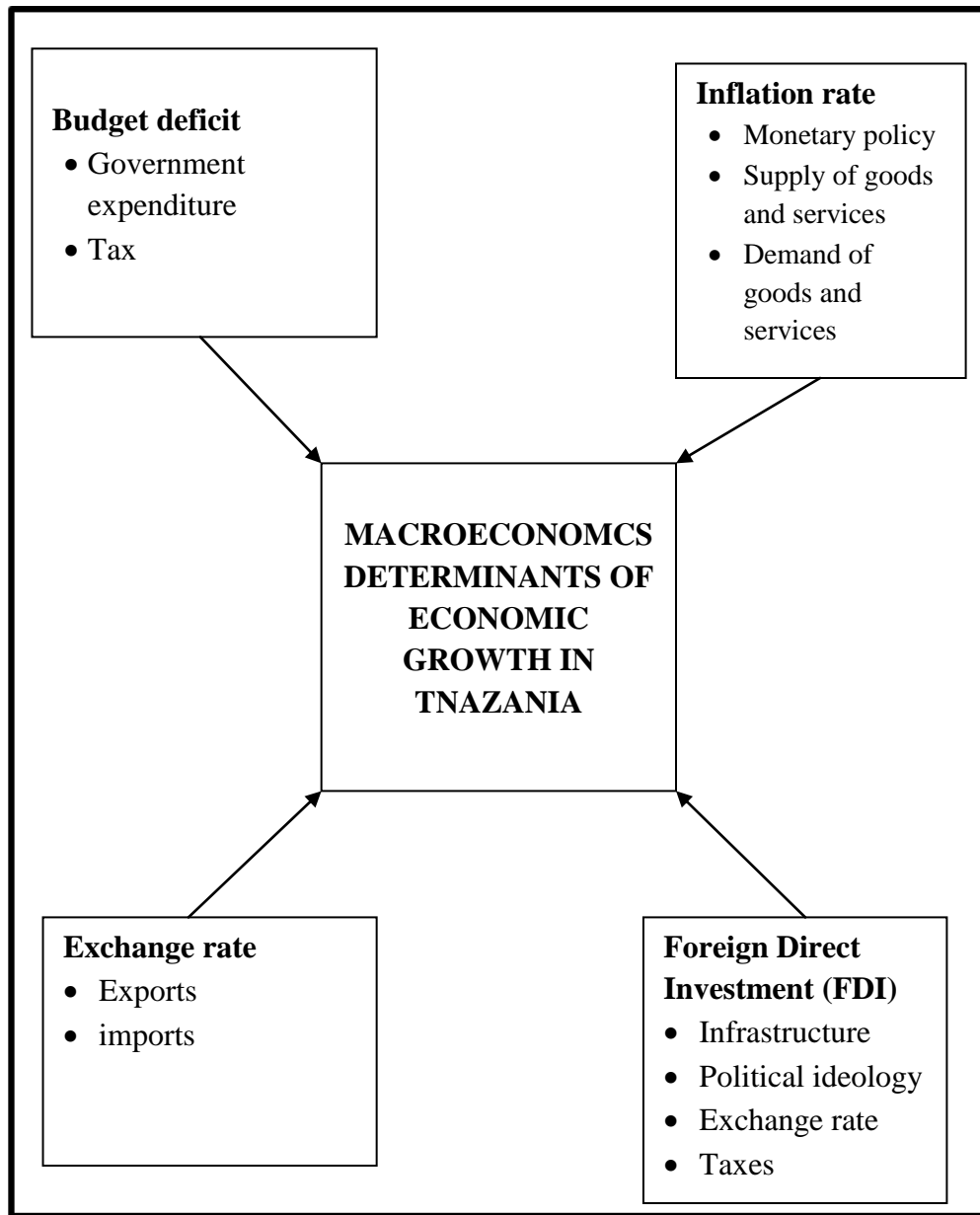


Figure 2.1: A Conceptual framework on macroeconomic determinants on economic growth (Tanzania)

Source: Researcher assisted by supervisor

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter Overview

The chapter presents the methodology used to establish the findings of the study. Several aspects related with research methodology are described to give out a clear picture on how the data were processed to arrive at the presented findings. The sampling process involved quarterly data for the period 1995 to 2013. The data were processed through different techniques such as the unit root test and cointegration techniques particularly the Ordinary Least Square (OLS) cointegration regression analysis.

3.2 Research Design and Sources of Data

The study adopted a statistical research design. This study employs secondary data collected from various sources as articulated above. Therefore, this study design has found to be suitable for this exercise as it was less costly in-terms of time and fund during data collection. Data was collected from the published national and international institutions including Bank of Tanzania Economic bulletin for the quarter ended 30th June, 1995 and 31st December, 2000, Tanzania Economic Survey (2008) ,National Bureau of Statistics (NBS), IMF, UNCTAD and World Bank websites. Data collected cover the period of nineteen years (1995-2013) for the variation of exogenous and endogenous variables. In order to get a good result from the regressed time series econometric model the number of observations matters a lot. Since the number of observation is lower, we decided to use quarterly data for the better result obtained.

3.3 Sampling technique

This study used time series data from 1995 to 2013 of variables of interest. Since the duration under study was short (1995 to 2013), quarterly data were used in the analysis to increase the sample size adequately for efficient econometric analysis. But the quarterly data were not readily available; the linear interpolation of the existing annual data was used to compute them. The straight-line interpolation between two known data points Y_t and Y_{t+1} as adopted by Opolot (1994) and Solinamo (1994) cited in Ngaruko (2002) was adopted as follows:

$$Q_1 = Y_t + 0.25(Y_{t+1} - Y_t)$$

$$Q_2 = Y_t + 0.5(Y_{t+1} - Y_t)$$

$$Q_3 = Y_t + 0.75(Y_{t+1} - Y_t)$$

$$Q_4 = Y_{t+1}$$

(Q_s are quarterly values).

Thus, a sample of 76 quarterly data observations was established.

3.4 Data collection methods

The data were collected through time series secondary data for the variables of interest; Gross Domestic Product (GDP), budget deficit, Inflation rate, Exchange rate and Foreign Direct Investment (FDI). Data were obtained from international organizations namely IMF, UNCTAD and World Development Indicators (WDI).

The decision to collect secondary data was due to limited time to visit country's institutions and geographically spatial orientations of the institutions from which data would be gathered. However, secondary data was used to provide plenty of information to test the hypotheses of the study and readily available data from various studies (Ghauri et al, 2002).

3.5 Data processing, analysis and presentation

A sample of 76 observations from quarterly data time series for the period 1995 to 2013 were used to carry out estimation procedures on the link between GDP, budget deficit, inflation, exchange rate and FDI by using a statistical software E-Views (Version 9). The unit root test in the series was established to estimate both stationarity and non stationarity tests. The stationarity test was performed so as to avoid spurious regression problems in time series data. The Augmented Dickey Fuller (ADF) test was used to estimate the unit root test. Pyndick (1998) points out that estimation on non stationary variables may lead to spurious results with high R^2 which explain how much the variance in the dependent variable is accounted for regression model from the sample. Thus, the unit root test was used to allow the performance of other estimation methods.

The OLS cointegration regression analysis was carried out to determine the statistical relationship between GDP (dependent variable) and budget deficit, inflation rate, exchange rate and FDI. The estimation used quarterly data of the time series spanning 1995 to 2013 and 76 observations was used to from the variables of the study. The null hypotheses on the long run cointegration among the variables of interest when

normalized for a unit coefficient on GDP were established. However, the results of both unit root tests and OLS cointegration regression analysis were tabulated and described for easy interpretation.

3.6 The empirical model

The empirical model for the study was of the form of equation 1 as presented below.

$$\text{GDP} = f(\text{BD}, \text{INFL}, \text{EXCH}, \text{FDI}) \dots \dots \dots (1)$$

Where;

GDP is Gross Domestic Product (in US Dollar),

BD is Budget Deficit (in US Dollar),,

INFL is Inflation rate (in percentage)

EXCH is Exchange rate (TZS/US Dollar)

FDI is Foreign Direct Investment (US Dollar)

The function for equation 1 study can be represented in a linear econometric form as presented in equation 2:

$$\text{GROWTH}_{\text{GDPt}} = \beta_0 + \beta_1 \text{BD}_t + \beta_2 \text{INFL}_t + \beta_3 \text{EXCH}_t + \beta_4 \text{FDI}_t + \xi_t \dots \dots \dots (2)$$

Where β_0 is constant and $\beta_1, \beta_2, \beta_3, \beta_4$ are coefficients of explanatory variables and ξ_t is error term.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF THE FINDINGS

4.1 Chapter overview

The chapter is about data analysis and discusses the main themes of the study as a reflection of the research objectives. However, the chapter presents the analysis plan which gave out the results of the findings. The unit root test and the Johansen cointegration test results are presented. Nevertheless, the Cointegration Regression Analysis results of economic growth of Tanzania give a detailed analysis of the macroeconomic policy determinants of Tanzania. The results of the regression are the basis for discussion of the findings.

4.2 The unit root test

The stationarity properties of all variables of interest GDP, BD, INFL and FDI were established using Augmented Dickey Fuller (ADF) test. The time series properties of the variables were examined to determine the order of integration of each variable in the model. Standard procedure in the time series literature suggests that the researcher should check first for unit root in series before estimating any equation. If a unit root exist then that particular series is considered to be non stationary. Estimation on non stationary variables may lead to spurious results with high R^2 which explain how much the variance in the dependent variable is accounted for regression model from the sample (Pyndick, 1998).The stationary test was performed so as to avoid spurious

regression problem in time series data. The Augmented Dickey Fuller (ADF) test was used for estimating the unit root. The results of ADF test are presented in table 4.1

Table 4.1: ADF test results

Levels			Second Difference			
Variable	ADF stat	Critical Values (5%)	ADF stat	Critical Values (5%)	Order of integration	Conclusion
GDP	1.658887	-2.901217	-9.010953	-3.472558	2	I(2)
BD	-2.178110	-2.900670	-8.759524	-3.474363	2	I(2)
INFL	-1.930608	-2.906210	-11.00487	-3.479367	2	I(2)
EXCH	-0.335404	-2.901217	-8.514347	-3.472558	2	I(2)
FDI	4.768180	-2.900670	-8.582150	-3.474363	2	I(2)

The results of the unit test for the variables GDP, BD, INFL, EXCH and FDI in table 4.1 indicates the presence of both stationary for FDI and none stationary for GDP, BD, INFL and EXCH in levels I(0). From the table, the unit root test of the variables at the critical value of 5 percent, the ADF statistics for GDP, BD, INFL, EXCH and FDI were 1.658887, -2.178110, -1.930608, -0.335404 and 4.768180 respectively. Nevertheless, the computed tau statistics for GDP, BD, INFL, EXCH and FDI were -2.901217, -2.900670, -2.906210, -2.901217 and -2.900670 respectively. Since the ADF statistics values of the variables GDP, BD, INFL and EXCH are less than the computed absolute values of the tau statistics, then the null hypothesis of the presence of the unit test is accepted implying that the data are none stationary.

However, because the unit root test at levels I(0) have the unit root, then the data after second difference were obtained. From table 4.1, the unit root test of the variables at

the critical value of 5 percent the absolute ADF statistics for GDP, BD, INFL, EXCH and FDI were 9.010953, 8.759524, 11.00487, 8.514347 and 8.582150 respectively. However, the computed absolute values of the tau statistics for GDP, BD, INFL, EXCH and FDI were 3.472558, 3.474363, 3.479367, 3.472558 and 3.474363 respectively. Thus, since the computed absolute values of the ADF statistics of the variables are greater than the computed absolute values of tau statistics, then the null hypothesis of the presence of the unit root test is rejected implying that the data are stationary which then allows for a cointegration test.

4.3 Results of Johansen maximum likelihood cointegration test

The study applied Johansen and Juselius (1990) maximum likelihood method to investigate whether there is more than one cointegration relationship among the variable of interest. At 5 percent significant level, both Trace test and the maximum eigenvalue test indicated there was only one cointegrating equation among the variables (Enders, 2004). The Cointegration test results are showed in table 4.2 and 4.3 below.

Table 4.2: Johansen Cointegration test result (trace stat)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.392034	69.04689	60.06141	0.0072
At most 1	0.192693	32.71941	40.17493	0.2291
At most 2	0.124905	17.09368	24.27596	0.3053
At most 3	0.090954	7.353817	12.32090	0.2913
At most 4	0.005363	0.392545	4.129906	0.5942
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				

The results in table 4.2 above indicates that at the critical value of 5 percent, the absence of hypothesized number of cointegration equations has the Eigen value of 0.392034, the trace statistics value of 69.04689, the tau value of 60.06141 and the p-value of 0.0072. The values for at most one cointegration equation indicates the Eigen value of 0.192693, the trace statistics value of 32.71941, the tau value of 40.17493 and the p-value of 0.2291. Therefore, since the p-value of the absence of the hypothetical number of cointegration is less than 5 percent where as the hypothesized number of cointegration equation for at most one is greater than 5 percent, then the hypothesized number of cointegration is at most one.

Table 4.3: Johansen Cointegration test result (Max-Eigen stat)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.404507	38.35910	30.43961	0.0042
At most 1	0.185435	15.17750	24.15921	0.4929
At most 2	0.112504	8.832022	17.79730	0.6133
At most 3	0.084885	6.564212	11.22480	0.2899
At most 4	0.005513	0.409123	4.129906	0.5858
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				

The results in table 4.3 indicates that at the critical value of 5 percent, the absence of the hypothesized number of cointegration equations has the Eigen value of 0.404507, the Max-Eigen statistics of 38.35910, the tau statistics value of 30.43961 at p-value of 0.0042. The values for at most one cointegration equation indicates the Eigen value of 0.185435, Max-Eigen value of 15.17750, the tau statistics value of 24.15921 at p-value of 0.4929. Therefore, since the p-value of the absence of the hypothesized number of cointegration equations is less than 5 percent and the hypothesized number

of cointegration equations for at most one is greater than 5 percent, then the hypothesized number of cointegration equations is at most one. Because the results of p-values for both Johansen Cointegration test result (trace statistics) and Johansen Cointegration test result (Max-Eigen statistics) reveals the acceptance of at most one hypothesized number of cointegration equation by having the p-value greater than 5 percent there shall be only one cointegration equation model and allow the cointegration regression analysis for estimated quarterly data from 1995 to 2013.

4.4 The Ordinary Least Square (OLS) cointegration regression analysis

The study applied the Ordinary Least Square (OLS) Cointegration Regression Analysis for quarterly data estimation of the time spanning 1995 to 2013. The estimation included 76 observations. The null hypotheses of no cointegration are rejected, that is there is long run cointegration among the variables of interest when normalized for a unit coefficient on GDP. The cointegration coefficients of Economic growth of Tanzania are given in Table 4.4 below.

Table 4.4 The Cointegration Regression of Economic Growth of Tanzania

Dependent Variable: GDP Method: Least Squares Included observations: 76				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BD	-0.086602	0.032814	-2.639151	0.0102
INFL	-0.000451	0.017565	-0.025686	0.9796
EXCH	0.006310	0.000346	18.21233	0.0000
FDI	0.001280	5.81E-05	22.04671	0.0000

From table 4.4 above, the coefficients of budget deficits (BD), inflation (INFL), exchange rate (EXCH) and Foreign Direct Investment are -0.086602, -0.000451, 0.006310 and 0.001280 respectively. However, the p-values for the variables BD,

INFL, EXCH and FDI are 0.0102, 0.9796, 0.0000 and 0.0000 correspondingly. From the observations, budget deficit and inflation are negatively related to GDP at 0.87 percent and 0.045 implying that an increase of budget deficit by 1 percent leads to a decrease of the GDP by 0.87 percent. Similarly, the increase of inflation by 1 percent leads to the decrease of GDP by 0.045 percent. However the results on the relationship between exchange rate and FDI on GDP are positively related meaning that the increases of exchange rate and FDI by 1 percent increases GDP by 0.63 percent and 0.13 percent respectively. Additionally, the p-values for BD, EXCH and FDI are less than 5 percent while the p-value for INFL is above 5 percent. Generally, BD, EXCH and FDI are significantly different to GDP hence the variables are viable to the model. Thus, the model of the study in a form of an equation with its coefficients appears as follows;

$$\text{GROWTH}_{\text{GDP}t} = -0.086602\text{BD}_t - 0.000451 \text{INFL}_t + 0.006310 \text{EXCH}_t + 0.001280 \text{FDI}_t$$

4.5 Discussion of the findings

This part discusses the findings on the relationship between GDP and the macroeconomic determinants of Tanzania after financial reforms for the period 1995 to 2013. The discussion bases on the key hypotheses of the study as the foundation of the findings. Thus, the four key areas will be focused on namely; budget deficit and economic growth, the effect of inflation on economic growth, the effect of exchange rate on economic growth and the relationship between FDI and economic growth.

4.5.1 Budget deficit and economic growth in Tanzania

Tanzania is observed as a country with high fiscal deficits for a long period of time (Solomon and Wet, 2004). Despite financial reforms which allowed internal borrowing and external borrowing still budget deficits are heavy (Kasidi and Said, 2013). The findings indicate a negative relationship between budget deficit and economic growth in Tanzania. The OLS cointegration regression analysis showed a negative coefficient of 0.86602 for budget deficit on the variables being examined. Thus, the findings reveal a long run relationship between budget deficit and economic growth in Tanzania. The findings are similar to findings by Aworinde (2013) which reveal that real GDP Granger cause fiscal deficits in Tanzania.

Again the findings suggest that when budget deficit in Tanzania increases by 1 percent, GDP decreases by 0.87 percent. However, Kasidi and Said (2013) observed that GDP growth in Tanzania by 1 percent leads to a decrease of external debt by 9 percent. Kasidi and Said (2013) observations suggest when the economy grows, the government demand little fiscal assistance hence a decrease in budget deficit. Thus,

economic growth in Tanzania is affected by budget deficit since when budget deficits grow more the economy stagnates hence economic problems in the economy.

4.5.2 The effect of inflation on economic growth in Tanzania

Tanzania has recorded trends of high inflation periods over periods of time (Solomon and Wet, 2004). Between 1997 and 2005 inflation declined due to implementation of institutional reforms and legal frameworks after reforms. The findings suggest inflation to impact economic growth in Tanzania. The variable (inflation) indicates a negative coefficient of 0.000451. The OLS cointegration regression analysis show a long run effect of inflation on GDP by 0.045 percent for a GDP growth of 1 percent. Similarly, studies by Kasidi and Mwakalemela (2013) construed that as the general price level (inflation) goes up by 1 percent, economic growth (GDP) in Tanzania goes down by 48.105. From Kasidi and Mwakalemela (2013) observations, a persistent increase in the general price level has negative impacts on economic growth in Tanzania.

Solomon and Wet (2004) found that GDP growth in Tanzania by 10 percent decreased inflation by 35 percent. Thus this implies that economic growth in Tanzania reduces inflation but when the reverse is true the performance of the economy (GDP) declines. Thus, since inflation is explained to persist in Tanzania for a long period of time (Solomon and Wet, 2004), Tanzania's economic performance is justified to encounter problems in turn many variables constituting the economy of Tanzania faces difficulties.

4.5.3 The effect of exchange rate on economic growth in Tanzania

One of the financial reforms implementation in Tanzania was the enactment of Foreign Exchange Act of 1992 which is described to have impacts on the economy of Tanzania (Odhiambo, 2010; Odhiambo, 2012; Mbogela and Nyamurunda, 2014). After reforms, the Tanzanian shilling is market determined with few official interventions by the BoT to smooth volatility (AfDB, 2004; AfDB, 2011). The determination of the exchange rate through market forces has caused upward and downward movements (Haji and Jianguo, 2014; AfDB, 2004; Odhiambo, 2010).

The findings from the OLS cointegration regression analysis reveal the variable (exchange rate) to have a positive coefficient of 0.006310. Therefore, the findings reveal a positive existence of the OLS cointegration relationship between GDP and exchange rate in Tanzania. The findings indicate a long run increase of GDP by 1 percent leads to the increase of the exchange rate by 0.63 percent. Therefore the findings suggest the depreciation of the Tanzanian shilling relative to other international currencies when the economy (GDP) grows. The findings are contrary to that of Mbogela and Nyamurunda (2014) which suggest a negative relationship between economic growth and exchange rate in Tanzania. The lowering of exchange rate in Tanzania leads to a long run increase of the value of GDP (Mbogela and Nyamurunda, 2014). However, Odhiambo (2011) indicates a short run bidirectional causality (Granger cause) between exchange rate and economic growth in Tanzania.

Despite a variation of the findings from those of Mbogela and Nyamurunda (2014) and Odhiambo (2011), still the findings portray a justification of the existence of the

positive relationship between depreciation of a shilling relative to other international currencies and economic growth in Tanzania. Lewis et al (2011) suggest a well performance of the macroeconomic growth in Tanzania. Additionally, AfDB (2004) and Odhiambo (2010) observe the Tanzanian shilling to experience gradual depreciations over time. Provided these depreciations, still economic growth (GDP) after financial reforms is explained to be impressive.

4.5.4 FDI and economic growth in Tanzania

FDI inflows in Tanzania are explained to impact GDP growth positively in Tanzania (Mnali, 2012; Utz, 2008; Balasubramanyam and Wei, 2004; Njau, Obeid and Patrick, 2015). The findings (OLS cointegration regression analysis) reveal the variable (FDI) to have a positive coefficient of 0.001280. Thus, the findings imply a long run positive relationship between FDI and GDP in Tanzania in the sense that an increase in GDP by 1 percent leads to more inflows of FDI by 0.13 percent. The findings are similar to those of Mnali (2012) and Balasubramanyam and Wei (2004) which suggest FDI inflows in Tanzania to influence economic growth. Additionally, a study by Moses, Joseph and Yao Shen (2013) in Arabi (2014) indicates a long run association between FDI and GDP growth in Tanzania.

The findings contradict some studies in Tanzania on the relationship between FDI and GDP growth. Lema and Dimoso (2011) observe FDI and GDP to be independence (neither FDI inflows nor GDP cause one another) since each one influence the other. Nevertheless, Odhiambo (2012) observes a unidirectional causal flow from investment to economic growth in Tanzania provided a short run feedback of causal

flow from GDP to investments. Therefore, provided a variation of the findings on the relationship between FDI and economic growth in Tanzania, FDI seems to be significant for the economy of Tanzania. Different sectors of the economy (mining, manufacturing industry, agriculture and trade) are said to benefit from FDI inflows in the country (Osakwe and Dupasquier, 2005; Utz, 2008; Mpaju, 2012). Again, Mpaju (2012) suggests FDI to encourage employment creation in Tanzania.

Despite the successes brought by FDI in Tanzania, several challenges are explained to exist. Poor infrastructures especially feeder roads affects FDI inflows in some areas in the country (Mnali, 2012). FDI dominates few sectors of the economy especially mining, trade and manufacturing industry (Osakwe and Dupasquier, 2005; Utz, 2008; Mpaju, 2012). These challenges are explained to impact efficiency of the performance of FDI in Tanzania thus a need of clear policies to change the status quo.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The chapter summarizes the main themes reflected from the findings. However, the chapter gives out conclusive remarks pertaining to the findings and presents the policy implications to the government of Tanzania in relation to macroeconomic determinants of economic growth in Tanzania. The recommendations are provided pertaining to several aspects observed from the findings.

The findings suggest different perspectives with regard to macroeconomic policy determinants of Tanzania after financial reforms. The findings reveal a long run relationship between budget deficits and economic growth in Tanzania similar to findings of Aworinde (2013). The findings construe that GDP growth by 1 percent lowers budget deficit by 0.87 percent. Therefore, economic growth in Tanzania improves the budget of the country (Kasidi and Said, 2013). However, inflation has shown a negative impact on economic growth after financial reforms in Tanzania. The findings reveal a long run impact of inflation on GDP. When GDP grows by 1 percent, inflation decreases for about 0.45 percent. Kasidi and Mwakalemela (2013) reveal an inverse relationship between inflation and GDP growth in Tanzania. Therefore, economic growth has good impression to Tanzania's economy since economic growth reduces inflation and budget deficits in the economy.

Exchange rate of the Tanzanian shilling relative to other international currencies has been depreciating over years. The findings suggest a positive long run relationship between exchange rate and economic growth in Tanzania. When the economy grows

by 1 percent, exchange rate increases by 0.63 percent. None of the previous support the relationship observed from the findings. Mbogela and Nyamurunda (2014) observations revealed that lowering of exchange rate in Tanzania adds the value of GDP. On the other hand, Odhiambo (2011) studies indicate a short run bidirectional causality between exchange rate and economic growth in Tanzania. However, the findings portray a blue print on how exchange rate does not affect economic growth in Tanzania. For many years the Tanzanian shilling has been deteriorating relative to other international currencies but the records disclose positive economic growth. Thus, exchange rate seems not to harm heavily the economy of Tanzania.

FDI and economic growth are long run positively related. The findings suggest economic GDP growth by 1 percent induces more FDI inflows for about 0.13 percent. Moses, Joseph and Yao Shen (2013) in Arabi (2014) specify a long run association between FDI and GDP in Tanzania. Again Mnali (2012) Barasubramanyam and Wei (2004) suggest FDI inflows in Tanzania influences economic. Nevertheless, the findings are contrary to those of Lema and Dimoso (2011) which suggest FDI and GDP to be independent in the sense that each one influences the other. Thus, FDI inflows in Tanzania after financial reforms have been impressive since they do not harm economic growth.

5.2 Conclusion

Macroeconomic determinants of Tanzania after financial reforms reveal distinct results in relation to economic growth. Budget deficits are explained to be high even after financial reforms (Solomon and Wet, 2004). The reforms opened room for

budget deficits to be financed by a combination of monetization and both domestic and foreign borrowings. However budget deficits remained heavy (Groarty, 2009 cited in Kasidi and Said, 2013), BoT (2014) observes a deficit of 8.9 percent of the country's GDP in 2013 and the deficit averages negative 7.69 percent of GDP from 1998 to 2013. The findings confirm a negative relationship between budget deficit and economic growth in long run. As GDP increases, budget deficit decreases and the opposite is true. Therefore, the trends of budget deficits have not changed even after financial reforms.

Inflation in Tanzania is said to be reduced from two digits to a single digit in mid 1990s (Solomon and Wet, 2004). The successes of are described to result from financial reforms after establishments of institutional and legal frameworks; between 1997 and 2005 inflation declined successfully from 16 percent to 4 percent respectively (Mnali, 2012). Improved budgetary management procedures and operations are key secrets for success (Muganda, 2002). Again Treichel (2005) construe that tight fiscal policies lead a drop of the trend of inflation existed in Tanzania. However, later on inflation trends changed reaching a two digit figure in 2009 as it was before financial reforms but it dropped to 5 percent in 2010 (Mnali, 2012). The findings suggest a negative relationship between inflation and economic growth in Tanzania. Its implication is that an increase in GDP by reduces inflation and the reverse is true. Therefore, therefore when macroeconomic policies allow the increased level of inflation they adversely affect economic growth. Thus, the changing patterns of the rate of inflation over years results from changes in macroeconomic policies in the economy.

The Foreign Exchange Act of 1992 was introduced inter alia to provide enabling environments for efficient allocation of foreign exchange resources (Odhiambo, 2012). The Interbank Foreign Exchange Market (IFEM) was established to increase the efficiency allocation of foreign exchange reserves by facilitating market determined exchange rates (Odhiambo, 2012). The reforms allowed a market determined exchange rate (AfDB, 2004; 2011). A market determined exchange rate resulted into upwards and downwards movements of the exchange rate (Haji and Jianguo, 2014). However the Tanzanian shilling experience depreciations over time (Odhiambo, 2010; AfDB, 2004). The findings suggest a positive relationship between exchange rate and GDP growth. Literally, when GDP grows exchange rate increases. The findings seem to be a puzzle economically. However, over years the Tanzanian shilling has been depreciating over time but GDP grows.

The performance of FDI in Tanzania is described to be impressive for a long period of time (Msuya, 2007). The financial reforms allowed for implementation of the institutional and legal frameworks carried by the government since mid 1980s, thus, FDI inflows increased (Mnali, 2012; Abdulla, Hongzhong and Othman, 2012; Mpaju, 2012). However, several challenges are identified in relation to FDI inflow in Tanzania. The distribution of FDI is uneven since few sectors of the economy (Manufacturing industry, mining and trade) as well as areas endowed with minerals and better infrastructure and social services benefits with FDI inflows (Utz, 2008; Mpaju, 2012; Msuya, 2007). The findings suggest a positive relationship between FDI and GDP growth in Tanzania. As GDP grows, FDI inflows increases, thus the

economy would have performed more impressively if challenges facing FDI inflows would have been eliminated.

5.3 Policy Implications

Financial reforms in Tanzania have slightly managed to make an impact on the performance of macroeconomic policy determinants. The exchange rate deteriorates against other international currencies provided GDP growth Tanzania has achieved in recent years. This is justified from the findings since GDP growth and exchange rate are positively related. Budget deficits have been heavy leading the country into donor dependence and internal borrowing through the banking system. For many years the government has been facing deficits leading into a negative relationship between GDP and budget deficits as suggested by the findings. Increased deficits in the government have adversely affected the economy since many development projects have been failed to be implemented. The public debt has increased due to borrowings to finance the budget.

Inflation has been existed provided some years of with good records of improvements. The findings suggest a negative relationship between economic growth and inflation. Thus, the trends of inflation recorded in the country justify its impacts on the performance of the economy. As a consequence, the findings imply government macroeconomic failures in Tanzania. Therefore, there is a need for macroeconomic policy makers in Tanzania to analyse the effectiveness of the existing policies on financial reforms to influence the performance of macroeconomic policy determinants after financial reforms.

5.4 Area for further research

Provided reforms introduced by the government to improve macroeconomic determinants the variables have not been performing better to influence GDP growth. Thus, there is a need to look on macroeconomic policy failures in Tanzania.

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APPENDIX

ANNEX A

Observations from quarterly data 1995 to 2013

Obs	GDP	BD	INFL	EXCH	FDI
1	4.3225	-9.275	32.425	525.9125	507.5
2	4.385	-10.65	30.75	542.195	545
3	4.4475	-12.025	29.075	558.4775	582.5
4	4.51	-13.4	27.4	574.76	620
5	4.6975	-13.075	25.8	576.065	635.25
6	4.885	-12.75	24.2	577.37	650.5
7	5.0725	-12.425	22.6	578.675	665.75
8	5.26	-12.1	21	579.98	681
9	5.57	-9.6	19.775	588.015	700.75
10	5.88	-7.1	18.55	596.05	720.5
11	6.19	-4.6	17.325	604.085	740.25
12	6.5	-2.1	16.1	612.12	760
13	6.795	-2.825	15.275	625.2575	998.75
14	7.09	-3.55	14.45	638.395	1237.5
15	7.385	-4.275	13.625	651.5325	1476.25
16	7.68	5	12.8	664.67	1715
17	8.0975	-6.375	11.575	684.6925	1783.5
18	8.515	-7.75	10.35	704.715	1852
19	8.8525	-9.125	9.125	724.7375	1928.5
20	9.35	-10.5	7.9	744.76	1989
21	9.4375	-10.225	7.4	758.6725	2187
22	9.525	-9.95	6.9	772.585	2385
23	9.6125	-9.675	6.4	786.4975	2583
24	9.7	-9.4	5.9	800.41	2781
25	9.8225	-8.2	5.7	819.41	2802.5
26	9.945	-7	5.5	834.41	2824
27	10.0675	-5.8	5.3	857.41	2845.5
28	10.19	-4.6	5.1	876.41	2867
29	10.2375	-4.75	5.25	898.9525	2885
30	10.285	-4.9	5.4	921.495	2903
31	10.3325	-5.05	5.55	944.0375	2921
32	10.38	-5.2	5.7	966.58	2939
33	10.4875	-4.7	5.6	984.54	3101.75
34	10.595	-4.2	5.5	1002.5	3264.5
35	10.7025	-3.7	5.4	1020.46	3427.25
36	10.81	-3.2	5.3	1038.42	3590
37	11.0225	-2.45	5.15	1051.148	3681
38	11.235	-1.7	5	1063.875	3772

39	11.4475	-0.95	4.85	1076.603	3863
40	11.66	-0.2	4.7	1089.33	3954
41	11.9525	-0.775	4.775	1099.23	4075
42	12.245	-1.35	4.85	1109.13	4196
43	12.5375	-1.925	4.925	1119.03	4317.75
44	12.83	-2.5	5	1128.93	4439
45	13.1575	-3.4	5.575	1159.673	4536
46	13.485	-4.3	6.15	1190.415	4633
47	13.8125	-5.2	6.725	1221.158	4730
48	14.14	-6.1	7.3	1251.9	4827
49	14.1875	-6.475	7.225	1250.185	5950.25
50	14.235	-6.85	7.15	1248.47	5388.5
51	14.2825	-7.225	7.075	1246.755	5669.25
52	14.33	-7.6	7	1245.04	5950
53	14.955	-8.05	7.825	1232.858	6197.75
54	15.58	-8.5	8.65	1220.675	6445.5
55	16.205	-8.95	9.475	1208.493	6693.25
56	16.83	-9.4	10.3	1196.31	6941
57	17.8025	-10.125	10.75	1227.31	7222.25
58	18.775	-10.85	11.2	1258.31	7503.5
59	19.7475	-11.575	11.65	1289.31	7784.75
60	20.72	-12.3	12.1	1320.31	8066
61	21.37	-11.475	10.625	1342.55	8240
62	21.045	-10.65	9.15	1364.79	8414
63	21.2075	-9.825	7.675	1387.03	8588
64	21.37	-9	6.2	1409.27	8762
65	21.755	-8.7	7.825	1449.983	8891
66	22.14	-8.4	9.45	1490.695	9020
67	22.525	-8.1	11.075	1531.408	9149
68	22.91	-7.8	12.7	1572.12	9278
69	23.15	-8.825	13.525	1574.84	9670.5
70	23.39	-9.85	14.35	1577.56	10062.5
71	23.63	-10.875	15.175	1580.28	10454.75
72	23.87	-11.9	16	1583	10847
73	25.0275	-11.7	13.975	1587.36	11314
74	26.185	-11.5	11.95	1591.72	11781
75	27.3425	-11.3	9.925	1596.08	12248
76	28.25	-11.1	7.9	1600.44	12715